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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/710,847	08/06/2004	Anil K. Chinthakindi	BUR920040112US1	6756

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EXAMINER	
CHIU, TSZ K	

ART UNIT	PAPER NUMBER
2822	

MAIL DATE	DELIVERY MODE
06/18/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/710,847	CHINTHAKINDI ET AL.	
	Examiner	Art Unit	
	Tsz K. Chiu	2822	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 March 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-10* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claim 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hasegawa et al. (20030047782) in view of Kurokawa et al. (20020055221).

With respect to claim 1, Hasegawa discloses a semiconductor substrate (101, for example figure. 1) including at least one front-end-of-the-line device (112, for example figure. 1) located on a surface thereof, at least one metal resistor (131, for example figure. 1) located on, or in close proximity to, said surface of said semiconductor substrate (101, for example figure. 1), said at least one metal resistor (131, for example figure. 1) comprising at least a conductive metal (132, for example figure. 1) however, Hasegawa did not discloses first level of metallization above said at least one metal resistor (131, for example figure. 1), first level of metallization comprises an inter-level dielectric material having contact openings that are filled with a conductive material (132, for example figure. 1).

Kurokawa discloses first level of metallization (13a,13b, For example Fig. 16) above said at least one metal resistor, first level of metallization comprises an inter-level

dielectric material (11, For example Fig. 16) having contact openings that are filled with a conductive material.

Since Hasegawa and Kurokawa are both from the same field of endeavor, the purpose disclosed by Kurokawa would have been recognized in the pertinent art of Hasegawa.

Therefore, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to have use Kurokawa interconnection to connect the resistor on the surface of the substrate for the purpose of assure quality and reliability for interconnection structure.

With respect to claim 2, Hasegawa discloses a trench isolation region (106, for example figure. 1) in said semiconductor substrate (101, for example figure. 1), and said at least one metal resistor (131, for example figure. 1) is positioned on said trench isolation region (106, for example figure. 1).

With respect to claim 3, Hasegawa discloses conductive metal comprises Ta, TaN, Ti, TiN, W, WN, Nicr, SiCr or a metal silicide (paragraph 27, lines 1-4).

With respect to claim 4, Hasegawa discloses conductive metal comprises TiN, TaN, NiCr or SiCr (paragraph 27, lines 1-4).

With respect to claim 5, Hasegawa discloses conductive metal has a thickness from about 20 to about 50 nm (paragraph 74, lines 10-11).

With respect to claim 6-7, Hasegawa discloses an etch stop layer located beneath said conductive metal (132, for example figure. 1).

Hasegawa did not discloses forming the device using etch stop layer, however, according to the MPEP, Section 2113, "Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process".

With respect to claim 8, Hasegawa discloses a dielectric material (Paragraph 116, lines 3-4) on said at least one metal resistor (131, for example figure. 1).

With respect to claim 10, Hasegawa discloses at least one FEOL device comprises a field effect transistor, a bipolar transistor, a BiCMOS device, or a passive device (112, for example figure. 1).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tsz K. Chiu whose telephone number is 571-272-8656. The examiner can normally be reached on 0800 to 1700.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Zandra V. Smith can be reached on 571-272-2429. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

TC
June 11, 2007

Zandra V. Smith
Supervisory Patent Examiner
11 June 2007